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The Evaluation of Senior World Judo Championships 2018 and 2019: The Effects of Sex and Weight Category on Points, Penalties, and Match Duration

2018 ve 2019 Judo Dünya Şampiyonalarının Değerlendirilmesi: Cinsiyet ve Kilo Kategorisinin Puan, Ceza ve Maç Sürelerine Etkileri

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ABSTRACT Objective: This study aimed to determine the effects of sex and weight category on points, penalties, and match efficiency index after recent rule changes implemented between 2018-2020. **Material and Methods:** The data were obtained from a total of 1,664 matches. The effects of sex and weight categories on total match duration, match efficiency index scores for each athlete per match, the number of ippon, waza-ari, and penalties were tested with a two-way analysis of variance. Chi-square test was used to verify the relationship between sexes, match duration percentages, and percentages of the matches with and without the golden score. Significance was set at $p<0.05$. **Results:** Match durations and efficiency index scores were not affected by sex and weight category. However, the percentage of matches completed before the official duration in women was found higher than men. The duration of the matches decreased when the weight category increased for both sexes. When the weight category increased, the number of ippons increased, and the number of waza-ari decreased. The number of waza-ari was found higher in women compared to men. Interaction of sex and weight category on shido was found to be significant. The number of shido was higher in women and it increased with the increase in weight categories. **Conclusion:** It can be inferred from the study that the weight category factor affected ippon and waza-ari scores in the Senior World Championships. Although match efficiency score and total match duration were the same in men and women, women had a greater number of scores and penalties compared to men.

Keywords: Athletic performance; efficiency; martial arts

ÖZET Amaç: Bu çalışma, 2018-2020 yılları arasında yapılan son kural değişiklikleri sonrasında cinsiyet ve ağırlık kategorisinin puan, ceza ve maç etkinliği indeksi üzerindeki etkilerini belirlemeyi amaçlamaktadır. **Gereç ve Yöntemler:** Veriler toplam 1.664 maçtan elde edildi. Cinsiyet ve ağırlık kategorilerinin; toplam maç süresi, maç başına her sporcu için maç verimlilik indeksi skorları, ippon sayısı, waza-ari ve cezalar üzerindeki etkileri 2 yönlü varyans analizi ile test edildi. Altın puan ile biten ve bitmeyen maçların yüzdeleri, cinsiyetler ve maç süresi yüzdeleri arasındaki ilişkiyi doğrulamak için ki-kare testi kullanıldı. İstatistiksel önemlilik $p<0,05$ olarak belirlendi. **Bulgular:** Maç süreleri ve etkinlik indeksi puanları, cinsiyet ve ağırlık kategorisinden etkilenmedi. Ancak kadınlarda resmi süreden önce tamamlanan maçların yüzdesi, erkeklerden daha yüksek bulundu. Her iki cinsiyette de kilo kategorisi artıkça maçların süresi azaldı. Kilo kategorisi artınca ippon sayısı arttı, waza-ari sayısı azaldı. Waza-ari sayısı kadınlarda, erkeklere göre daha yüksek bulundu. Cinsiyet ve ağırlık kategorisinin, shido üzerindeki etkileşimi önemli bulunmuştur. Kadınlarda, shido sayısı daha fazlaydı ve kilo kategorilerindeki artışla arttı. **Sonuç:** Çalışma sonucu, ağırlık kategorisi faktörünün Büyükler Dünya Şampiyonaları'nda ippon ve waza-ari puanlarını etkilediğini ileri sürmektedir. Maç etkinlik skoru ve toplam maç süresi, kadınlarda ve erkeklerde aynı olmasına rağmen kadın sporcular erkeklere göre daha fazla puan ve ceza aldılar.

Anahtar Kelimeler: Atletik performans; etkinlik; savunma sporları

Kodokan officially published the first refereeing rules in 1955 before the World Championship in 1956. Since then International Judo Federation (IJF) has implemented many changes such as contest area size, judo uniform colour, weight categories, classification of penalties and scores, hantei (determination of the winner by referees at the end of the match with flag), golden score with limited time and golden score with unlimited time.[1-3] Especially during the last decade, refereeing rules have been changed a lot to

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make judo a more positive and popular sport which is supported by the study by Balafoutas et al. indicating that spectators prefer to see score than penalties.[4-9] These changes were followed by such changes as the World Ranking List introduction, weigh-in is carried the day before the competition, only one referee is inside the competition area with video replay in case of any doubt, elimination of scores, prohibition of leg grab techniques and match duration.[6,7,10] Especially changes in match duration, scores and penalties have significantly affected technical and tactical components of judo matches.[3-7,11,12] The change of match duration has also affected the technical and tactical components of judo matches. At the very beginning, the match duration could last from 3 to 20 minutes, and sometimes additional time could be given if necessary. Then it was changed to 5 minutes for both sexes. According to the current rules, a judo match lasts 4 minutes for both men and women. If a judoka throws his/her opponent and is awarded with an ippon, the match may last shorter than 4 minutes. On the other hand, the match may last longer in case of a draw.[1,10,13]

Rule changes have led to changes in the physical capacities of judo athletes as well as the structure of the matches.[14] There are many studies that investigated the evaluation of scores, penalties, and match durations and effects of rule changes.[15-18] According to these studies, the structure of the matches has been significantly affected by important rule changes.[3-7,12,19] Franchini et al. investigated European Championships before and after the rule changes and stated that rule changes could not meet the expectations in terms of an increase in numbers of ippon and decrease in penalties but reported a difference in the number of ippons between sexes.[7] Another study compared London 2012 and Rio 2016 Olympics, and it determined no change in the number of ippon and waza-ari despite a decrease in yuko and an increase in penalties. When sexes and weight categories were compared, women athletes received fewer penalties than men, and no difference was found in scores and penalties between different weight categories.[4] Adam et al. investigated World Championships after the rule changes and reported no change in the number of ippon according to sex and weight category but highlighted that rule change partially achieved its goal.[20] Moreover, the authors reported that women athletes received fewer number of penalties than men. A current study by Balcı and Ceylan indicated that penalties still significantly and indirectly affect the match results during high level competitions.[21] Weight categories affected the number of penalties, and sex and weight categories affected match durations. It has been well documented that weight categories and sex affects judo match components such as gripping, attack, defence and groundwork in elite judo athletes.[22,23] There is no current study investigating the effects of IJF rule changes in 2018 in the high-level judo matches in terms of scores, penalties, and match duration according to sex and weight categories. Moreover, current understanding trends of scores, penalties, and match durations can help coaches to shape the training programs to meet the specific demands of different sexes and weight categories. Therefore, the present study aimed to investigate the effects of sex and weight categories on scores, penalties, match efficiency index, and total match durations in the 2018 and 2019 World Judo Championships.

MATERIAL AND METHODS

DATA SAMPLE AND ETHICAL ISSUES

The data were obtained from 1664 (665 women- 999 men) official matches during the 2018 and 2019 World Championships and retrieved from the official website of IJF (www.judobase.org) in October 2019. Judo Refereeing Rules published in January 2018 by IJF will be applied till the 2021 Olympic. Thus, these changes were implemented during the 2018 and 2019 World Championships. Because no difference was found between 2018 and 2019 World Championships in terms of total match duration, calculated match efficiency index score, ippon, and waza-ari scores, and shidos per match ($p<0.05$), the two competition were evaluated together. While scores, penalties, and match efficiency scores were calculated, the data obtained for each athlete were used. The match results with fusen-gachi and/or kiken-gachi were excluded from analysis. Weight categories were classified as extra-lightweight, half-lightweight, lightweight, half-

middleweight, middleweight, half-heavyweight, heavyweight.[5,10]

Match efficiency score was calculated equally not only from scores but also from penalties and match duration with considering rule changes:[24]

Judo Match Efficiency=((((Ippon*20)+(Wazari*10))*Match duration factor)- (Shido*3)-(HSM*20)+26)*Match result for judoka

Match duration factor= 5 for 1-60 second, 4 for 61-120 second, 3 for 121-180 second, 2 for 181-240 second, 1 for 241 second and above

Match result for judoka= 2 for the winner, 1 for the loser

There are no ethical issues in analysing and interpreting the data from an open-access website because all results were obtained in secondary form and not generated by experimentation.[25] Additionally, personal identification or countries of the athletes whose matches were analysed were not reported.

STATISTICAL ANALYSIS

Data are presented as mean and standard deviation, and 95% confidence interval was calculated. The effects of sex and weight categories on match duration, scores, penalties, and efficiency index scores for each athlete per match were tested with two- way (2×7) analysis of variance (ANOVA). Partial eta squared (η2) was used to estimate the effect size, using the 0.0099, 0.0588, and 0.1379 considered as small, medium, and large effect sizes.[26] The relationship between percentages of matches finished before official duration, official match duration, golden scores, and sex, and weight category were tested via Chi-square, and Cramer's-V (PHI) was calculated and classified with degrees of freedom (.10≤ Small effect; .11 to .30=Medium effect; .50≥ Large effect).[27] Package for the Social Sciences (SPSS) 16.0 (SPSS Inc. Chicago, II. The USA) was used for statistical analysis. Significance was set at $p<0.05$.

RESULTS

Mean values, standard deviations, and 95% confidence intervals of ippon scored per athlete per match are presented in Table 1.

The effect of weight category on number of ippon score was found significant ($F_{6,3314}=2.44$; $p=0.02$; $\eta^2=0.004$ [small effect]). Number of ippon score in heavyweight categories was higher than the rest ($p<0.05$). Sex ($F_{1,3314}=2.42$; $p=0.12$; $\eta^2=0.001$ [small effect]), sex and weight categories interaction $F_{6,3314}=0.53$; $p=0.78$; $\eta^2=0.001$ [small effect]) did not affect the number of ippon score.

Mean values, standard deviations, and 95% confidence intervals of waza-ari scored per athlete per match are presented in Table 2. Sex ($F_{1,3314}=4.68$; $p=0.03$; $\eta^2=0.001$ [small effect]) and weight categories ($F_{6,3314}=2.13$; $p=0.05$; $\eta^2=0.004$ [small effect]) had significant effect on number of waza-ari score. The total number of waza-ari scored by women athletes per match was higher than that of men ($p<0.05$). Additionally, the number of waza-ari score was found lower in heavyweight categories compared to lower

TABLE 1: Number of ippon per athlete per match according to sex and weight category.

	Women		Men	
Weight categor[b]	Mean±SD	95% CI	Mean±SD	95% CI
Extra-lightweight	0.30±0.46	(0.23-0.36)	0.30±0.46	(0.25-0.36)
Half-lightweight	0.23±0.42	(0.17-1.29)	0.30±0.46	(0.25-0.35)
Lightweight	0.27±0.44	(0.21-0.33)	0.30±0.46	(0.26-0.35)
Half-middleweight	0.28±0.45	(0.22-0.35)	0.28±0.45	(0.23-0.34)
Middleweight	0.28±0.45	(0.22-0.35)	0.33±0.47	(0.27-0.38)
Half-heavyweight	0.34±0.48	(0.27-0.42)	0.32±0.47	(0.26-0.38)
Heavyweight[b]	0.35±0.48	(0.28-0.43)	0.40±0.49	(0.32-0.47)
Total	0.29±0.45	(0.26-0.31)	0.31±0.46	(0.29-0.33)

SD: Standard deviation; 95% CI: 95% Confidence interval.

[b]Main effect of weight category was significant, ippon number per match was higher in the heavy weights than in the others, except for 78 and 100 kg ($p<0.05$)

TABLE 2: Number of waza-ari per match per athlete according to sex and weight category.

	Women[a]		Men	
Weight category[b]	**Mean±SD**	**95% CI**	**Mean±SD**	**95% CI**
Extra-lightweight	0.39±0.62	(0.30-0.48)	0.37±0.61	(0.30-0.44)
Half-lightweight	0.44±0.70	(0.35-0.54)	0.33±0.59	(0.26-0.39)
Lightweight	0.42±0.68	(0.34-0.51)	0.34±0.63	(0.28-0.41)
Half-middleweight	0.37±0.63	(0.28-0.46)	0.36±0.65	(0.29-0.44)
Middleweight	0.38±0.67	(0.29-0.48)	0.33±0.59	(0.26-0.40)
Half-heavyweight	0.32±0.61	(0.22-0.41)	0.32±0.58	(0.25-0.39)
Heavyweight	0.29±0.63	(0.19-0.39)	0.22±0.54	(0.14-0.31)
Total	0.38±0.66	(0.34-0.41)	0.33±0.60	(0.31-0.36)

SD: Standard deviation; 95% CI: 95% Confidence interval.

[a]Main effect of sex was significant, waza-ari numbers different from men ($p<0.05$).

[b]Main effect of weight category was significant, waza-ari numbers per match were lower in the heavy weights than in the others, except for 78 and 100 kg ($p<0.05$).

TABLE 3: Number of shido per athlete per match according to sex and weight category.

	Women[a]		Men	
Weigth category[b]	**Mean±SD**	**95% CI**	**Mean±SD**	**95% CI**
Extra-lightweight	0.12±0.33	(0.1-0.2)	0.02±0.14	(0.0-0.0)
Half-lightweight	0.90±0.85	(0.8-1.0)	0.18±0.42	(0.1-0.2)
Lightweight	1.50±0.94	(1.4-1.6)	0.44±0.63	(0.4-0.5)
Half-middleweight	0.94±0.66	(0.8-1.0)	0.73±0.74	(0.6-0.8)
Middleweight	1.85±0.59	(1.8-1.9)	0.76±0.72	(0.7-0.8)
Half-heavyweight	1.12±0.77	(1.0-1.2)	1.39±1.12	(1.3-1.5)
Heavyweight	2.54±0.50	(2.5-2.6)	1.18±0.75	(1.1-1.3)
Total[c]	1.30±1.00	(1.2-1.3)	0.60±0.80	(0.6-0.6)

SD: Standard deviation; 95% CI: 95% Confidence interval.

[a]Main effect of sex was significant, shido numbers different from men ($p<0.001$).

[b]Main effect of weight category was significant, different from each other except for between 70-90 and 78-100 kg ($p<0.001$).

[c]Sex and weight category interaction effect was significant.

weight categories ($p<0.05$). In contrast, no significant effect of sex and weight category interaction on number of waza-ari score was not found ($F_{6,3314}=0.57$; $p=0.75$; $\eta^2=0.001$ [small effect]).

Mean values, standard deviations and 95% confidence intervals of penalties per athlete per match are presented in Table 3. The effect of sex ($F_{1,3314}=606.30$; $p=0.00$; $\eta^2=0.155$ [large effect]), weight category ($F_{6,3314}=285.22$; $p=0.00$; $\eta^2=0.341$ [large effect]) and both of them ($F_{6,3314}=78.73$; $p=0.00$; $\eta^2=0.125$ [medium effect]) on number of shido were significant. Total shido number per match in women was found higher than men ($p<0.05$). As for weight categories, the number of shido increased when weight category increased ($p<0.05$). The number of shido which increased with increasing weight category in women was found higher compared to men.

Mean values, standard deviations and 95% confidence intervals of match efficiency index per athlete per match are presented in Table 4. Sex ($F_{1,3314}=1.93$; $p=0.17$; $\eta^2=0.001$ [small effect]), weight category ($F_{6,3314}=0.26$; $p=0.95$; $\eta^2=0.000$ [small effect]) and interaction of two factors ($F_{6,3314}=0.21$; $p=0.98$; $\eta^2=0.000$ [small effect]) did not affect the match efficiency index scores.

Mean values, standard deviations and 95% confidence intervals of match durations per athlete per match are presented in Table 5. The effect of sex ($F_{1,1657}=3.07$; $p=0.08$; $\eta^2=0.002$ [small effect]),

TABLE 4: Match efficiency scores according to sex and weight category.

	Women		Men	
Weigth category	**Mean±SD**	**95% CI**	**Mean±SD**	**95% CI**
Extra-lightweight	89.33±85.49	(76.96-101.70)	87.67±83.83	(78.05-97.29)
Half-lightweight	85.83±80.41	(74.99-96.66)	84.97±80.20	(76.48-93.45)
Lightweight	90.32±84.88	(79.19-101.44)	85.85±79.54	(77.44-94.26)
Half-middleweight	88.41±82.74	(76.63-100.18)	84.95±79.76	(75.89-94.02)
Middleweight	92.11±83.70	(80.36-103.84)	87.60±82.74	(78.20-97.00)
Half-heavyweight	97.01±86.88	(83.36-110.66)	85.09±80.17	(74.86-95.33)
Heavyweight	90.94±85.60	(77.40-104.47)	89.05±80.95	(76.94-101.17)
Total	90.46±83.98	(85.80-94.83)	86.45±80.90	(82.73-89.83)

SD: Standard deviation; 95% CI: 95% Confidence interval.

weight category ($F_{6,1657}$=0.36; p=0.90; η^2=0.001 [small effect]) and their interaction ($F_{6,1657}$=0.66; p=0.68; η^2=0.002 [small effect]) were not found significant.

Frequencies and percentages of matches finished before official duration, total match duration and golden scores for both men and women athletes are given in Table 6. The relationship between categorized match durations and sex was found significant (χ^2=907,24; p<0.001; Cramer's V=0,054 [small effect]). The relationship between sex and matches with and without golden score was found significant (χ^2=114,16; p<0.001; PHI=0,019 [small effect]). The relationship between weight categories and matches with and without golden score was found significant in both men (χ^2=2031,57; p<0.001; PHI=0,104 [small effect]) and women (χ^2=2198,64; p<0.001; PHI=0,135 [medium effect]).

TABLE 5: Match durations according to sex and weight category.

	Women		Men	
Weigth category	**Mean±SD**	**95% CI**	**Mean±SD**	**95% CI**
Extra-lightweight	186.4±110.5	(170.4-202.4)	187.3±101.4	(175.7-198.9)
Half-lightweight	190.8±108.1	(176.2-205.3)	190.9±112.0	(179.0-202.7)
Lightweight	188.6±121.5	(172.7-204.5)	189.3±112.7	(177.4-201.2)
Half-middleweight	184.8±111.1	(168.9-200.6)	187.1±94.6	(176.3-197.8)
Middleweight	170.8±107.8	(155.7-186.0)	192.1±111.2	(179.4-204.7)
Half-heavyweight	163.9±122.9	(144.6-183.2)	194.1±103.5	(180.8-207.3)
Heavyweight	173.1±110.7	(155.6-190.6	188.1±100.5	(173.1-203.1)
Total	180.7±113.4	(174.6-186.8)	189.8±105.9	(185.2-194.5)

SD: Standard deviation; 95% CI: 95% Confidence interval.

TABLE 6: Frequency and percentage of match duration in men and women judo athletes.

	Women		Men		Total	
Match time interval (second)	**f**	**%**	**f**	**%**	**f**	**%**
0-60	104	15.6	110	11.0	214	12.9
61-120	119	17.9	170	17.0	289	17.4
121-180	118	17.7	191	19.1	309	18.6
180-239	124	18.6	175	17.5	299	18.0
240	80	12.0	144	14.4	224	13.5
Golden score	120	18.0	209	20.9	329	19.8
Total	665	100	999	100	1664	100

DISCUSSION

The main findings of the present study were as follows: 1) The number of ippon increased with the increase in weight category while waza-ari score decreased, 2) The number of waza-ari score was found higher in women compared to men, 3) Interaction of sex and weight category affected the number of penalties; the number of shido was found higher in women compared to men. Also the number of shido increased when weight category increased, 4) When total match duration was evaluated, no effect of sex and weight category was found; besides, the number of the matches completed before the official duration in women was higher than men athletes.

When the effect of sex was investigated in terms of scores during the judo matches, there are many conflicting results. It was reported that the techniques by which men and women athletes received scores differed in high-level competitions, and performance determinants for men and women judo athletes were different.[28,29] The effects of these differences in performance determinants regarding scores are not known. The present study highlights that the waza-ari score per athlete per match in women was found higher than men while the number of ippon was the same. Calmet et al. reported no effect of sex on the number of ippon and waza-ari but also indicated that women athletes had a higher number of yuko, which was a valid score at that time than men.[4] The findings of Calmet et al. are the same as the present study since with the latest rule change about the evaluation of ippon and waza-ari and elimination of yuko in 2018 the positions which were previously awarded yuko were decided to be evaluated as waza-ari.[4,10] In contrast, a study comparing 2015 and 2017 World Judo Championship suggested no effect of sex on the number of ippon and waza-ari scores.[5] It can be inferred that the difference between the present study and that of Calmet et al. in terms of the effect of sex on waza-ari may be related to changes in the evaluation waza-ari score.[5]

Receiving penalties increased the probability of losing, especially in heavyweight judo athletes.[21,27,30] Weight categories and sex did affect penalties. While the number of shido increased when weight categories increased in both genders, it was determined that women had more shido per match than men. There have been many conflicting findings from many studies investigating the number of shido per athlete per match, like the present study. Weight categories have been reported not to affect the number of shido in both the Olympic Games (London 2012-Rio 2016) and World Championships (2015-2017).[4,5] Moreover, a higher number of shido was found in men compared to women athletes.[4,5,31,32] Techniques athletes received scores and performance determinants during the high level of judo competitions differ according to weight categories and sex.[23,28,29] It was suggested that frequent rule changes negatively affect the motivation of judo athletes and coaches.[33] Comprehensive rule changes have been implemented, especially regarding penalization of shido, the number of penalties, elimination of score awarded to the opponent when the judo athlete is penalized with shido.[10] The conflict between the present study and previous ones can be explained with the differences that have occurred after the technical, tactical, and motivational adaptation of the athletes to the changed rules.

Many match efficiency indexes have been calculated to determine and compare the efficiency level of the athletes during competitions. Relevant studies generally used only scores and activities during the match to calculate efficiency index.[15,20,34] In this study, scores, penalties, and total the duration of the matches were considered while calculating the efficiency index. Despite the abovementioned effects of weight category and sex on scores and penalties, the efficiency index per athlete per match was found similar in all weight categories for men and women athletes. However, Ceylan et al. stated that winner athletes presented higher efficiency index during elimination matches while it decreased towards the finals in contrast to no change in defeated athletes.[24]

No effect of sex and weight categories on total match duration was found. Different results have been suggested by the researches investigating high-level judo competitions due to the changes in refereeing rules and especially match duration. Sterkowicz-Przybycień et al. indicated that weight categories did not affect the total match duration but

also reported a shorter match duration in middleweight women athletes.[23] Calmet et al. reported that weight categories affected match duration in the Olympic Games, and sex did not affect total match duration despite the change in official match duration for women from 5 min to 4 min in 2016 Rio.[4] Regarding the analysis in World Championships, women athletes had shorter total match durations than men, but weight categories did not affect the total match duration.[5] In another study where effect of different stages on match outcomes were investigated, Ceylan et al. determined an increase in the match duration from eliminations to the finals which was explained with the incremental difficulty of the matches against more powerful opponents.[24] Especially the rule changes since 2003 concerning match duration, limitation of the golden score duration, and scoring as well as other important changes related to scores and penalties have affected total match duration. Therefore, these changes may have differentiated the effects of sex and weight categories on total match duration.

Significant relationships were determined between sex, weight categories, and categorized classification of total match durations. The frequency of matches that finished before and at the official time was higher in women athletes. Thus, the frequency of the matches that ended in the golden score was higher in men athletes. Segedi et al. investigated a grand prix tournament in 2013 and reporter shorter golden score duration for both sexes (men 3%, women 5%).[18] In the current study, the percentages of matches lasting shorter and ending in the golden score changed according to the weight category (the percentages we not shown). The frequency of the matches with a golden score was low in extra-lightweight women athletes and half-middleweight men athletes. The highest percentages of matches with the golden score were in half-lightweight men and lightweight women.

CONCLUSION

The findings of the present study infer that the effects of sex and weight category on scores and penalties are important. Also, these factors did not affect total match duration. However, they affected the numbers of matches that ended before 4 min, at 4 min and during the golden score. When taking the previous analysis of high-level judo competitions into account, it can be concluded that the rule changes have led to differences in total match duration, scores, and penalties according to sex and weight categories.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Bayram Ceylan, Şükrü Serdar Balcı;* ***Design:*** *Şükrü Serdar Balcı;* ***Control/Supervision:*** *Şükrü Serdar Balcı;* ***Data Collection and/or Processing:*** *Bayram Ceylan;* ***Analysis and/or Interpretation:*** *Şükrü Serdar Balcı;* ***Literature Review:*** *Bayram Ceylan;* ***Writing the Article:*** *Bayram Ceylan;* ***Critical Review:*** *Şükrü Serdar Balcı, Bayram Ceylan.*

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